


# DRAFT

## Mattole Watershed Synthesis Report



*The mission of the North Coast Watershed Assessment Program is to conserve and improve California's north coast anadromous salmonid populations by conducting, in cooperation with public and private landowners, systematic multi-scale assessments of watershed conditions to determine factors affecting salmonid production and recommend measures for watershed improvements.*

# NCWAP General Findings and Discussion

## Mattole Basin Issue and Recommendations Synthesis

After conducting public scoping meetings and assessment activities, the NCWAP team compiled reviewed their list of issues affecting the Mattole Basin. Based upon this review, the team then developed a set of hypotheses to give direction to their scientific inquiry and frame recommendations. The Mattole Basin issues, hypotheses and recommendations applicable to the production of salmon and steelhead are:

### Issues:

- Sediment, temperature, pool habitat, escape and ambush cover, and substrate embeddedness in the estuary are thought to be outside of supportive levels for salmonid survival and or production in the estuary.
- Abandoned roads, new road construction, and road maintenance issues related to landsliding and sediment input to streams are concerns in much of the basin.
- High water temperatures are a concern in most parts of the basin.
- High sediment levels are a concern in most parts of the basin.
- Excessive extraction of water during low flow periods is a concern in some parts of the basin.
- Large woody debris recruitment to streams is a concern in some parts of basin.

### Hypotheses:

- Summer stream temperatures in much of the Mattole Basin are not within the range of temperatures that fully support healthy anadromous salmonid populations.
- Aggradation from fine sediment in some stream channels has reduced channel diversity needed to fully support anadromous salmonid populations and has compromised salmonid health.
- A lack of large woody debris in some stream reaches has reduced channel diversity needed to fully support anadromous salmonid populations and has compromised salmonid health.
- Some stretches of streams in the basin are not fully supportive of salmonids due to stream flow reductions related to human diversion.

### Recommendations:

- Establish a 24-hour summer water and air temperature monitoring regime and program to detect trends using continuous monitoring thermographs.

- Establish monitoring stations and train personnel to measure and track in-channel fine sediment levels.
- Continue efforts such as road improvements and decommissioning throughout the basin to reduce sediment delivery to the Mattole River and its tributaries.
- Establish systematic programs to address more specific recommendations at the subbasin and stream reach levels.
- Based upon the latest science on placement of large woody debris in stream channels managers in the Western subbasin should work to improve channel structure and function for salmonids.
- Encourage reducing the unnecessary and wasteful use of water to improve river flows and fish habitat.

**Table 25: Management Recommendations for the Mattole Subbasins.**

Subbasin	Rescue Rearing	Monitor Temperature	Manage for Temperature	Monitor Sediment	Establish Vegetation	Timber Harvest	Increase LWD	Manage Livestock	Improve Roads	Reduce Diversion
Estuary	X	X		X						
Northern		X	X	X	X	X	X	X	X	
Eastern		X	X	X	X	X	X	X	X	
Southern		X		X		X			X	X
Western		X	X	X	X		X	X	X	

**KEY TO FIELDS IN TABLE X:**

**Rescue Rearing** = Rescue rearing effort advised

**Monitor Temperature** = temperature monitoring program advised

**Manage for Temperature** = manage areas to reduce solar radiation inputs

**Monitor Sediment** = sediment monitoring program advised

**Establish Vegetation** = streamside vegetation planting advised

**Timber Harvest** = encourage the use of lower impact timber harvest practices

**Increase LWD** = improve channel structure with large woody debris

**Manage Livestock** = there is evidence that stock is impacting the stream or riparian area and exclusion should be considered

**Improve Roads** = continue road improvements and road decommissioning

**Reduce Diversion** = reduce unnecessary and wasteful uses of water.

Insert “List of Inventoried Streams” – Page 1.

Insert “List of Inventoried Streams” – Page 2.

## Limitations of this Assessment

This watershed assessment provides useful and valuable information and represents a considerable effort of the involved agencies, contractors, and public. It was limited in duration, scope, detail, and analysis level due to constraints in budget, time, access, and overall resources. Where data are limited, hypotheses were developed along with recommendations to test or improve our understanding of watershed processes. Specific limitations are presented below to put the assessment in context. To the extent possible, we will address these limitations during the preparation of the final draft of this assessment, scheduled to be completed May 2002.

- Point or more local data, e.g., individual stream reaches, were described in relation to those smaller geographical areas. As descriptions and inferences are drawn from those data to a more regional, watershed scale the certainty associated with those conclusions and inferences is reduced. In those cases, the NCWAP team offered working hypotheses with suggestions for testing or improving the level of certainty.
- The DMG's landslide and geomorphic analyses were limited to aerial photo interpretation from varying sets of photos and limited verification. Limited aerial photo coverage does not bracket temporal distribution of important watershed events, which may not be evident in photos taken years after the fact.
- Imagery from 1965 was only partly reviewed. Due to access, time, budget, and staffing constraints, field checking of interpretations did not occur.
- The geologic analysis did not identify erosion sources beyond mass wasting and gullying, such as surface erosion or erosion induced by human activities.
- At the analysis scale of 1:24,000, the detection of geologic features smaller than 100 feet in greatest diameter is poor.
- Localized point source channel aggradation and meandering flows observed shortly after the 1964 storms were not systematically compared sequentially through time to detail evolving stream channel morphology.
- The DMG's channel classification was done based on channel gradients taken from a Digital Elevation Model. This model was based on imperfect topographic data. Most of the basin topography is mapped at a contour interval of 80 feet, which is too coarse to adequately interpret the gradient of individual reaches. No field stream gradient surveys were done for this assessment, due to time and budget constraints.
- The DMG analysis of fluvial and hillslope conditions is limited, ongoing, and incomplete. Data collection has been abbreviated to meet deadlines. Collected data is not completely converted into a digital format needed for spatial analysis. This includes the DMG's Landslide Potential Map, fluvial geomorphic characteristics, and spatial data from NCWQCB, DFG, DWR, and CDF. The DMG has not had an opportunity to review all documents referenced in this report. Furthermore, DMG has not fully reviewed the latest draft of this report. Conclusions in this draft report or the other documents do not necessarily reflect the views or consent of the DMG.
- There was only time to compare the broadest contrasts between land use impacts and habitat conditions. More subtle analysis of habitat changes to properly characterize recent land use activities requires a far larger and more detailed database to make significant conclusions. If the NCWAP had more than one year to study initial themes developed,

then trends in either recovery, stabilization, or continued impairment could have been reasonably established on a geographical basis.

- The NCRWQCB's water chemistry analysis was limited to available USEPA StoRet data for the period 1973 to 1988 at one location, and samples obtained by the NCRWQCB at four locations for two sampling events in 2001. The sampling frequency was scattered and discontinuous and did not allow for much detailed temporal analysis.
- Data on pesticide occurrences in surface water were not available from StoRet, private interests, nor collected in the NCRWQCB sampling of 2001.
- The temperature range used for "proposed fully suitable" of 50-60° F was developed as an average of the needs of several cold water fish species and life stages, including chinook and coho salmon, and steelhead and cutthroat trout. As such, the range does not represent the slight variance of fully acceptable ranges for particular species.
- In-channel data and some temperature data were provided as summary statistics (medians, means, maxima), limiting the ability to factor variability into the analysis, and not allowing for independent checks on the data quality. As such, the analyses and subsequent assessment are limited in scope.
- Temperature data analysis did not include probability of exceedance from cumulative distribution plots, nor hours of exceedance of a threshold. This analysis was limited by not having raw data for all sites, obtaining raw data late in the analysis, and data interface problems.
- The NCRWQCB did not have acceptably useful turbidity or suspended solids data, though considers them critical to watershed analysis. The absence of useful data and any analysis of suspended loads and turbidity are limitations in this assessment. These data sets exist, but were for one surface sampling location only and were not used in the 2002 assessment.
- Analysis of temperature information is without knowledge of the extent of a thermal reach upstream of the continuous data logger.
- The 1994 vegetation data used in this report will be replaced by more accurate 1998 vegetation data during the public review period. Some changes in analysis results are expected.
- Historic timber harvesting data is compiled from previous work performed by the Mattole Restoration Council. The CDF has not yet validated the accuracy of this data.
- Although the DFG has surveyed in excess of 120 miles of anadromous reaches in the Mattole, there are a few, most importantly Mattole Canyon Creek and the Lower North Fork, that could possibly identify opportunities for local improvements for fish. Extensive stream surveys will strengthen the stewardship effort.
- Most of the DFG surveys used for this NCWAP stream reach assessment were conducted in 1996. A few more recently, and three nearly ten years ago. Although most of the channel characteristics remain relatively constant, components like habitat complexity and riparian shade canopy can change fairly quickly. Current surveys would contribute to the data relevance and help track change to the streams in a timely manner.
- The EMDS model used is preliminary; not all components of the model are currently in use due to data and modeling issues (i.e., stream temperature, fish passage, stream flow); not all data layers used in the model have yet been fully subjected to quality control

review; scientist and practitioner peer review of the model is planned but not yet completed.

- Due to a lack of time in the NCWAP schedule, this round of the synthesis report has not had extensive peer review by watershed residents.